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NOTES

A NOTE ON "VOCALITY"

In a recently published paper,¹ Dr. Weiss attempts to redefine the 'attribute' of vocality. He seeks to identify judgments of vowel-character with that attribute which is describable in terms of mellowness and shrillness, and asks all investigators to use the name "vocality" for this characteristic.² It would seem advisable to examine critically the foundations upon which such a classification may be based.

A psychophysical study of the tonal attributes brings forth evidence, cumulative rather than direct, that judgments of vowel-quality are not made upon a purely attributive basis, but result from the observer's experience in the use of spoken language.³ This Dr. Weiss tacitly admits when he says that "when a subject is asked to discriminate the vowel character of a fork tone, the reaction is one that is already well established in the ordinary (speech) habits of the individual."⁴ But he regards these habits as merely selecting the conventionalized points in an already existent continuum, which may be described either in vocal terms or in terms of mellowness and shrillness. Moreover, these conventionalized points occur in an octave relationship, because the process of conventionalization picks, as the vowels of any language, combinations of mellowness and shrillness that are separated by equal sensorial steps, corresponding with logarithmic intervals in the series of physical frequencies. The octave-relationship is, then, to be regarded as manifestation of the Weber-Fechner Law.⁵

My own study of the tonal attributes shows that the limen for vocal judgments does not follow Weber's Law.⁶ Of the tonal attributes, volume is the only one that gives indication of following this law.⁷ A comparison of the differential limens for volume and for vocality shows that the former are uniformly the larger of the two, even though the vocal judgment is more difficult and less immediate than is the judgment of volume. This relationship, of course, precludes the possibility that the vowels are judged upon a basis of volume, that is to say, upon the basis of the characteristic of pure tones that obeys the logarithmic law.

¹ A. P. Weiss, The Vowel Character of Fork Tones, *Amer. Jour. of Psychol.*, 31, 1920, 166 ff.

² *Op. cit.*, 191.

³ G. J. Rich, A Study of Tonal Attributes, *Amer. Jour. of Psychol.*, 30, 1919, 131 ff. Although Dr. Weiss' paper appeared later than mine, it would seem that he wrote it at an earlier date.

⁴ *Op. cit.*, 192 f.

⁵ *Op. cit.*, 190 f.

⁶ G. J. Rich, *op. cit.*, 139.

⁷ *Op. cit.*, 149 ff. Also A Preliminary Study of Tonal Volume, *Jour. of Exper. Psychol.*, 1, 1916, 13 ff.

When he invokes the Weber-Fechner Law as an explanatory principle,⁸ Dr. Weiss narrows his conception of vocality to that of a characteristic which shows the octave-relationship found only by Köhler. The trend of recent experimental work tends to show that the vowels of a language (Dr. Weiss' 'conventionalized vocality combinations') seldom occur an octave apart.⁹ Köhler's experimental situation was such that, as Stumpf has suggested,¹⁰ his observers may well have tended to judge as the 'pure vowels' the same tonality occurring in successive octaves. This would seem to be a sufficient explanation of the relationship found by Köhler, especially in view of the subsequent lack of verification.

On the other hand, vowel-character is considered by Dr. Weiss as a continuum which is to be described in terms of mellowness and shrillness, terms which are descriptive of pitch-brightness. In so far as the limens for pitch-brightness are in all cases lower than the vocal limens, this attribute may serve as the basis for the perceptual judgments of vowel-likeness.¹¹ The successive character of the qualities that form the pitch-brightness series is definitely in line with what is seemingly the only constant factor in the results of the many investigations of vowels, the order in which the vowels follow one another as one ascends the musical scale.¹² But the possibility that vocal judgments are based upon pitch-brightness does not necessarily *identify* whole vowel-series within a range of little over an octave. *Op. cit.*, 133. them with the latter attribute. The very fact that the limens for vowel-character and for pitch-brightness are vastly different, both in magnitude and in course,¹³ is evidence that the vocal judgment is not made singly and unequivocally upon a basis of pitch-brightness, that is to say, it is not merely a judgment of pitch-brightness in a 'conventionalized combination.' There is not at present sufficient evidence to warrant the assertion that the vocal perception (or 'habit') is a single attributive continuum describable in non-vocal terms, in terms of one or more of the attributes of pure tones.

University of Pittsburgh

GILBERT J. RICH

⁸ The Weber-Fechner Law would explain fully as satisfactorily the occurrence of the pure vowels (the 'conventionalized vocality combinations') at any intervals other than the octave, *e.g.*, at intervals of fifths, thirds, etc.

⁹ D. C. Miller, *The Science of Musical Sounds*, 1916. H. Schöle, Über die Zusammensetzung der Vokale U, O, A, *Arch. f. d. ges. Psychol.*, 13, 1918, 12 ff. C. Stumpf, Die Struktur der Vokale, *Sitzungsber. d. Preuss. Akad. d. Wissensch.*, 1918, I Halbband, 333 ff. G. J. Rich, A study of Tonal Attributes, *Amer. Jour. of Psychol.*, 30, 1919, 131 ff. Dr. Weiss' own experimental results fail to show an octave relationship.

¹⁰ C. Stumpf, Über neuere Untersuchungen zur Tonlehre, *Ber. ü. d. 6 Kong. f. exper. Psychol.*, 1914, 305 ff.

¹¹ G. J. Rich, *op. cit.*, 138 f; 144 f; 154 ff; 164.

¹² Thus, unpractised observers may report, in proper succession, the

¹³ See Footnote 11.